Galvanizing Tank Zinc Dirt Remover

Amit Sahare[1], Anam Behera[2], Diksha Balvir[3], Diwar Kewat[4], Lokesh Bopche[5], Prof. Mr. Vaibhav Titarmare[6], Nilesh Sonare[7]

[1 2 3 4 5] *Student Department of Mechanical Engineering, NIT Polytechnic, Nagpur*

[6] *Faculty of Department of Mechanical Engineering, NIT Polytechnic, Nagpur*

[7] *Head of Department of Mechanical Engineering, NIT Polytechnic, Nagpur*

Abstract **- The stripping of Zinc(Zn) in sulfuric acidic solutions from galvanized steel products obtained from industry and the removal of impurities from this solution and the conditions required for Zn recovery were experimentally investigated. According to the results, it is possible to completely strip Zn from used galvanized steel products by using sulfuric acid with a pH value of up to 0.2. A solution that contains Zn over 80-85 g/l and Fe 0.2 g/l can be produced by repeated stripping and it is possible to obtain ZnSO4 from the solution by adding volatile liquid (ethyl alcohol). The precipitated Zn compound is ZnSO4.H2O.**

This compound contains 36.4% Zn and 0.002% Fe and is a raw material pure enough for commercial use. The ethyl alcohol used to obtain ZnSO4.H2O from the rich stripping solution is recovered with 90% efficiency through distillation at 78◦C for 20 min.

This process optimized by the experiments allows for the the manufacture of saleable. products and causes no environmental problems.

Index Terms **- zinc dirt remover**

1.INTRODUCTION

Steel has been a frequent choice of engineering material in today economy for various construction /manufacturing industries such as building and automotive sector. It offers ease of formality high strength-to-weight ratio and is abundant and relatively inexpensive compare to other more exotic material. But steel has natural affinity toward rusting. The only way to isolate the steel from the corrosive effect of the environment. Zinc costing has been used to product steel from corrosion from that 250 years. Zinc first used in construction (roofing) was in 1811 in Belgium.

2.LITERATURE SURVEY

1. R.S. RHEEMETAL (1950 This method is reference how to galvanize tank. people from cleaning the tank. reduce slippery portion near tank order to avoid accidental human being and save time.

2. KAILASH P. PATEL (2013):- This method is reference how to remove dirt form galvanizing zinc tank. The chapters on technical equipment, design and manufacturing according to hot-dip galvanizing requirements as well as on occupational safety and quality management have been updated.

• The commercially important method of powder coating is now covered in the sections on the post-treatment of zinc coatings.

• All chapters take into account the vastly expanded range of hot-dip galvanized products, e.g., truck frame parts.

After eight years of intense discussions with the responsible government departments, trade associations and the IG Metal (Industrial Union of Metal Workers) the method of hot-dip galvanization, since August 2005, has been integrated into the job description of a Surface Coating Specialist. Therefore, for the first time, a Germany-wide recognized trade for hot-dip galvanization specialists exists.

3. ORINAD (1948):- This method is reference for the method of removing dirt from tank . The model is formed and the basic parameters of an estimation of economic efficiency of carrying out of diagnostics are determined. The economic efficiency of application of the modern method of vertical steel tank examination is estimated. The high economic efficiency of the new technological method is substantiated in comparison with the traditional method. It is established that the advantage of using the innovative diagnostic method in comparison with the traditional method is fully manifested when it is necessary to maintain a large

fleet of tanks. It is calculated that, given the design parameters, the savings in the use of the method proposed by the authors in the long term are 1773.2 million rubles compared with traditional. The use of a new technological method - the technology of diagnosing vertical steel tanks without removing the protective coating, allows to reduce the total cost of conducting diagnostics with a discount of 8.7 times.

4 GEORGE RROEMER (1933):- This method is reference for the method of apparatus coating and cleaning The method is based on the pressure difference between the inside and the outside. The suction process, in fact, generates a vacuum that accelerates the migration of the substances in (saline) solution from the porous material to the outside, so that they can be collected and removed. The mechanical vacuum comprises: I) a suction head that can be coupled to at least one surface portion of the material to be treated, II) an absorbing element positioned in the suction head so that, when at least a part of the surface of the absorbing element is placed on the sample, it becomes in contact with the surface under treatment III) a suction device in fluidic communication with the suction head, capable of generating a pressure difference between the inside of the head and the inside of the porous material. IV) An apparatus wherein the absorbing element is imbued with a liquid aimed at reducing the surface tension of the solution. A flexible tube connects the pump to an interface nozzle that must be placed upon the surface to be cleaned, which comes in contact with the material. In order to preserve the surface from direct contact with the rigid part of the nozzle, it is provided with a soft sponge that acts as a filter for the salts. The suction occurs by means of a pump with a range flow from 15 Nm3 /h to 38 Nm3 /h. The decontamination was controlled by conductivity tests on the sponges and the cleaned samples at the end of treatment.

5. JOHN F RAMPHE (1977) High strength steels (HSS) are increasingly used in structural engineering applications owing to their high strength to weight ratio. Due to the inferior ductility and strain-hardening characteristics of HSS and the lack of relevant structural performance data, plastic design is currently not permitted for HSS indeterminate structures. To this end, the present paper aims to generate structural performance data and to assess the applicability of plastic design to hot-finished HSS continuous beams. Upon a summary of previously drawn conclusions regarding the applicability of European design provisions to S460 and S690 hot-finished square and rectangular hollow sections, a gap on the response and design of indeterminate structures is identified.

FIG.1. GALVANIZING TANK ZINC DIRT REMOVER"

Principle Parts Fabrication of Galvanizing Tank Zinc Dirt Remover following principle parts

1. Air Compressor
2. Air Flow Control Valve
3. Pneumatic Cylinder
4. Air Hose Pipe
5. Connecting Rod
6. Dirt Remover Bucket

1. AIR COMPRESSOR

FIG 1.1 AIR COMPRESSOR

An air compressor is pneumatic device that converts power (using an electrical motor, diesel or gasoline etc) into potential energy stored in pressurized air. By one of several methods, an air compressor forces more and more air into a storage tank, increasing the pressure. When the tanks pressure reaches its engineered upper limit the air compressor shuts off.

2. HAND LEVER VALVE

FIG1. 2. HAND LEVER VALVE

In the absence of electrical supply, manually operated valves such as Hand Lever Valves are used. The functioning is the same; however, the solenoid coil is replaced by a hand lever, which controls the movement of the spool inside the valve, thereby allowing the air to pass.

3. PNEUMATIC CYLINDER

FIG1. 3. PNEUMATIC CYLINER

Pneumatic cylinder use compressed air to create rotary or linear mechanical motion and power application that do work. The pneumatic actuator will use the compressed to act on a piston inside the cylinder in order to crepe the required motion for example clamping or moving load along a linear path. The end application can be as varied as specific device like a gripper or clamp to a vacuum cup used to handle glass.

4. AIR HOSE PIPE

FIG1. 4. AIR HOSE PIPE

1. A Hose is Flexible hollow tube type to carry pressurized air at moves it from one place to another.
2. Hose is also known sometimes called as pipes.
3. Hose design is based on a combination of Application and performance.

5. CONNECTING ROD

FIG1. 5 CONNECTING ROD

1. Connecting rod is used to increase the height of pneumatic Cylinder. because the dirt removing bucket is far away from cylinder and it is not possible to handle the bucket if there is no connecting rod.
2. And the extra connecting road is attached to cylinder with help of adjustable joints.

6 DIRT REMOVER BUCKET.

FIG1. 6 DIRT REMOVER BUCKET

1. Traditional bucketing system is a best material handling, moving and storing equipment effectively and quickly in industry.
2. This bucket side is made up of grills with small holes. And it is connected with cylinder with help of connecting rod.
3. The movement of bucket (open $ close) is controlled with help of air flow controller.

3.METHODOLOGY

1 Finding Problem: Dirt removing is the problem which affects many human lives around the world this is a major issue and it is a question for question of death or life for those person for those authority formats dangerous operations.

3.1.2 Collecting research paper: Collecting research paper from the internet on the prefabricated machines or system for carry manhole cleaning operation. Collecting research paper on fabrication of Archimedes screw collecting research paper on design and parameters of Archimedes screw.

3.1.3 Project proposal: Making a project proposal for the selection of project and experiencing our ideas with project in charge and getting suggestions and implementing that suggestion and submitting the project proposal to the project in charge.

3.1.4 Selecting area of work: After project finalization we have to decide and area of work for fabrication of manhole cleaning machine with respect to the residence of group members as the suitable area of work is our group member house college workshop and other workshop for fabricating some complex components.

3.1.5 Making CAD model and animation of machine: Making and CAD model of machine for clearing all the concepts related to the machine. Making the animation of machine for explaining the working of machine.

3.1.6 Finding resources: Resources should be fined for fabrication of machine it requires some prefabricated parts which are readily available in market also the complex parts such as telescopic rod and Archimedes screw should be fabricated from various workshops finding the materials and work piece for fabricating those parts.

3.1.7 Collecting different components-After fabrication and purchase of all the components all the components should be collected from various locations at the workplace.

3.1.8 Assembly: Assemble all the components of our model according to their proper position and check they are work proper or not.

3.1.9 Trial on project: Take a trial on project and find out some parameters such as

1. Solid waste material removing rate.
2. Time required for cleaning the buckets of machine.

4.WORKING

- In this project there are two pneumatic cylinder which is operated with the help of compressed air.
- When we put it inside the zinc tank with help of crane it's get deep into the bottom side. then we give operating signal to the pneumatic cylinder.
- With the help of controller the compressed air flow inside the cylinder which forward Piston that connected to the bucket.
- Bucket get closed and Cobalt zinc dirt inside bottom get in the bucket and then with help of crane we take out that dirt from zinc tank.
- Among the various zinc coating method. Hot dip galvanizing process Protect steel surface from rusting by covering it with a very thick (up to a 100 um) coating of zinc.
- This is achieved by immersing steel articles in molten zinc.
- Therefore, it is compulsory to protect zinc tank to prevent from leakage.

5.CONCLUSION

- Among the various zinc coating method. Hot dip galvanizing process Protect steel surface from rusting by covering it with a very thick (up to a 100 um) coating of zinc.
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- Therefore, it is compulsory to protect zinc tank to prevent from leakage.

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